Before the

Federal Communications Commission

Washington, DC 20554

In the Matter of)

Modification of Parts 2 and 15 of the)

Commission's Rules for unlicensed devices and) ET Docket No. 03-201

Equipment approval.)

MEMORANDUM OPINION AND ORDER AND FURTHER NOTICE OF PROPOSED RULE MAKING

COMMENTS OF VECIMA NETWORKS INC.

Vecima Networks Inc. hereby provides its comments in response to the Further Notice of Proposed Rulemaking in the above captioned proceedings.

1. Introduction

Vecima Networks Inc. (Vecima) is a leading global supplier of high-speed fixed, nomadic and mobile wireless Internet access products. Vecima manufactures both licensed and unlicensed Internet access products in over 30 frequencies. Additionally, Vecima is the manufacturer and distributor of WaveRider brand 900 MHz Internet access products, due to the asset purchase of this product line from a previous manufacturer. Vecima therefore inherits and shares common interests with its many hundreds of Wireless Internet Service Providers, schools, local governments, hospitals and others that operate devices in the 900 MHz ISM band.

Vecima has both retained and improved the WaveRider product brand technology, applications and global distribution footprint of the WaveRider 900 MHz product line over the past 14 months of ownership.

As perhaps the earliest substantive enabler of 900 MHz broad-band wireless technology in the North American marketplace, WaveRider products and users have a history of interest in both FCC Part 15 Rules and current discussion respecting these matters. Wireless Internet Service Providers and the technology that enables this service, together produces tremendous benefit for thousands upon thousands, perhaps millions of Americans, who are currently benefiting from operations that provide the last mile solution in rural areas of the United States. There can be no doubt that these operators continue to provide vital technological infrastructure which allows citizens, business, government organizations and entire communities to benefit from the new "information and communication revolution". Likewise, these smaller ISP's have enabled this substantial number of rural Americans to bridge the "workplace digital divide" by enabling citizens to live rurally and still have access to broadband services which significantly enhance their business, family and personal interests.

2. Vecima submits that consideration for a form of spectrum etiquette in the unlicensed bands might include in its goals:

    a) Recognition of the important role unlicensed devices have in improving the quality of life in rural America by providing broadband connections to underserved marketplaces and fulfilling other communication needs.

    b) Strong consideration to encouraging industry, consumers, all levels of government, businesses and users to coexist within a regulatory framework that promotes efficient spectrum usage in the unlicensed bands.

    c) In the vast majority of occurrences, devices utilizing these frequencies should be able to adequately access these frequencies for shared usage.

    d) The necessary regulatory encouragement of operators and manufacturers to use, design and build respectively, the services and devices that are designed to coexist in these frequencies.

3. Respecting the FCC's assessment, in consideration of the two petitions mentioned in the Report and Order, Vecima agrees with the FCC's action in dismissing.

4. Vecima has read with interest the comments provided by the WISPA.WISPA has spoken to the matter of spectrum etiquette and the related regulatory challenge to avoid negative impact to current users in this environment. Vecima is in agreement with the potential benefits of encouraging the development and usage of less bandwidth intensive and interference-reducing spectrum etiquette techniques.

Generally speaking, Vecima is in substantive agreement and support of the well-reasoned comments made by WISPA relative to these proceedings. Vecima is pleased to have this opportunity to provide a few additional comments.

5. With respect to the Commission's invitation to comment on etiquette suggestions made by Cellnet, Vecima agrees with Cellnets' observation that there are new devices entering the marketplace that are not necessarily designed nor deployed with adequate regard to coexistence in the unlicensed bands. However, Vecima respectfully disagrees with Cellnet's proposed mechanism for spectrum etiquette.

   Cellnet's proposal is wholly inappropriate for the many non-AMR systems that must carry much more data in a timelier manner. Vecima agrees with WISPA that the key condition should be the presence or absence of end-user data, although a definition of end-user data that applies generally may be problematic. The intent should be for a system to avoid transmitting unless the transmission is useful. Vecima would even encourage a lower maximum duty cycle of up to 10% when no end-user data is present. Further, Vecima recommends that this limitation should apply to both Wideband Digital Modulation Schemes and Frequency Hopping Schemes.

   Again, WISPA has responded to this matter in these proceedings with sound suggestions, observations and alternatives that Vecima generally agrees with.

6. Additionally, the Commission has noted that there is the potential under the Rules for unlicensed devices to preclude operation of other unlicensed devices due to higher power levels and excessive bandwidth design characteristics. Vecima's comments are:

   a) *Maximum Transmit Bandwidth for Wideband Digital Modulation systems* - Vecima agrees with WISPA's suggestion of a maximum transmit bandwidth of no more than 8 MHz, allowing for at least three non-overlapping channels and notes that this gives users experiencing interference an opportunity for cooperation that would not exist if one of the devices were to occupy almost the entire band. It is difficult to imagine that any single radio device capable of occupying more than half the available spectrum can be considered "neighbor-friendly". With increased demand and contention in the 902-928 MHz unlicensed band, Vecima would agree that approximately one-third band usage per device is much more realistic and also reflective of the sharing approach characterizing the intended usage of the band.

b) *Automatic Transmitter Power Control* – Vecima recognizes that power control can and does reduce interference, but respectfully disagrees with WISPA's recommendation that devices that implement ATPC be allowed to transmit at higher than currently allowed power levels when wireless conditions warrant. Vecima notes that interference is one of the factors influencing the receive signal quality on which a power control algorithm might base its power level. In this case, two interfering systems could end up increasing their transmit levels to the maximum, each attempting to overcome the interference of the other. Finally, the primary wireless condition that requires higher transmit power is to increase distance, so that a long distance link – of considerable value to one operator – would simply transmit at the maximum level all the time, significantly increasing interference for all other devices. Vecima recommends that the maximum transmit power level remain the same.

7. The Commission has also invited comments applicable to the effects of synchronization; rules for Narrow and Wideband Frequency Hopping systems versus Digitally Modulated Systems and Listen-Before-Transmit protocol. Vecima's comments to these matters are:

a) *Synchronization* – Vecima recommends that the FCC prohibit the synchronization of transmissions from multiple devices in a system or otherwise under control of the same party, in such a way as to more fully occupy the silent intervals between transmissions. In this, Vecima respectfully disagrees with WISPA's position. WISPA argues: "In the real world, it seems unlikely that a network operator would configure their network to transmit continually…" While this may be true in the case of co-located transceivers in a WISP network, there may be other applications, possibly of a broadcast nature, in which constant transmission would be an advantage to one operator. However, this does not preclude the use of synchronization between transmitters as described by WISPA for self-interference or inter-network interference reduction, as long as that synchronization does not "more fully occupy the silent intervals." In particular, synchronizing transmitters to transmit at the same time would not normally do so.

b) Operator control– Vecima agrees with WISPA's proposal to require that that Narrowband Frequency Hopping equipment allow the operator to avoid use of certain frequencies. Vecima would further recommend that the configuration be required to

allow for the avoidance of at least an entire 8 MHz band as identified above, and that the requirement also apply to Wideband Frequency Hopping equipment. This would allow a Frequency Hopping system and a Wideband Digital Modulation system to co-exist.

By mandating this requirement, the Commission effectively reinforces the "good neighbor" policy that characterizes the 902-928 MHz band. The net effect would give operators the flexibility and competitive choice of hardware availability to coordinate interference and noise reduction efforts.

c) *Listen-Before-Transmit* – Vecima agrees with WISPA that listen-before-talk protocols such as CSMA/CA are not as efficient as scheduled or polled protocols. Vecima further notes that under load, these protocols are subject to collisions – transmissions that cause interference without conveying any useful data – and, under very heavy load, can collapse into constant collisions as more and more units attempt to access the airwaves to retransmit payloads that previously collided.

8. In the matter of Publicity and Enforcement, Vecima is in general agreement with WISPA's well-considered comments and recommendations respecting the manufacture of equipment, timelines for compliance, applicability of spectrum etiquette as well as WISPA's further recommendations respecting timeline considerations for the 2.4 GHz and 5.8 GHz bands. Respecting timelines for not-yet-manufactured equipment that does not leave a minimum of an 8 MHZ band free for other use, Vecima would even encourage an enhanced timeline to exit non good-neighbor technology from the ISM broadband wireless marketplace.
9. Conclusions:
    a) Rules for spectrum etiquette would include that maximum transmit bandwidth for Wideband Digital Modulation systems not exceed 8 MHz, thus allowing at least three non-overlapping channels within the 902-928 MHz spectrum.
    b) Rules to the effect that maximum duty cycle be limited possibly to 10 percent for all three system types when no end-user data is present.
    c) Recommendation that the FCC prohibits the synchronization of transmissions from multiple devices in a system or otherwise under control of the same party in such a way as to more fully occupy the silent intervals between transmissions.

d) To the extent the Commission believes that *Maximum transmit bandwidth* Rules, or lack thereof, have allowed problematic occurrences within the 902-928 ISM band, Vecima proposes consideration be given to halving WISPA'S recommendations respecting manufacturers timelines to remove/improve performance in accordance with any mandate limiting maximum transmit bandwidth to 8 MHz for not-yet manufactured equipment. This will serve a two-fold purpose. Initially, it will remind manufacturers and operators in the 900 MHZ band of the inherent "good-neighbor" policy presumed in the ISM band. Secondly, it will serve to forewarn hardware manufacturers and services operators in the 2.4 GHz and 5.8 GHz ISM bands that the FCC may henceforth consider, if not mandate, similar spectrum etiquette relative to any adjudication in these 900 MHz ISM band proceedings.

e) Recommend that listen-before-transmit protocols be allowed, not mandated. Scheduled or polled protocols are more efficient.

f) Recommend that maximum transmit power level remains the same.

Respectfully submitted by:

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